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# MONOGRAPH OF THE CORYNELIACEAE

HARRY MORTON FITZPATRICK

(*Continued from the July number*)

## 4. CORYNELIA Fries ex. Acharius, Systema Mycologicum 2: 535. 1822

*Corynelia* Acharius, in Fries Obs. Mycol. 2: 343. 1818.

Type species, *Corynelia uberata* Fries ex Acharius.

Stromata black, formed within the host tissue, later erumpent, usually small and scattered, in *C. fructicola* confluent to form an effuse crust, bearing perithecia and in some species also pycnidia, perithecia seated on the stroma, cespitose, elongated (flask-shaped, barrel-shaped, top-shaped, clavate, etc.) the apex rounded and undifferentiated, or definitely lobed, in *C. fructicola* flattened into a disc as in *Tripospora;* not provided with a typical ostiolum, at maturity dehiscent either by a wide opening resulting from one or more deep clefts, or as in *C. fructicola,* fimbriate-lacerate at the apex and finally dehiscent by a wide funnel-shaped opening; asci ovate to clavate, long-stalked, thin-walled, evanescent, usually 8-spored (varying from 1–8), aparaphysate; ascospores when young hyaline, smooth and by mutual pressure polyhedral; at maturity, spherical, brown, thick-walled, echinulate, unicellular; pycnidia seated on the stroma among the perithecia, more or less globose, black; pycnospores hyaline, elongated to fusiform, unicellular.

In this genus the ascospore is provided with a thin, echinulate epispore and a thick endospore. On young spores the echinulations are slightly developed or absent. The endospore at maturity is provided with a considerable number of definite circular thin-spots or perforations which are probably germ-pores. These

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apparently vary in number but in some cases certainly exceed fifteen.

### KEY TO THE SPECIES OF CORYNELIA

*A*. Perithecium with a definite cylindrical neck broadened at the apex into a flattened disc; dehiscence by fimbriate-laceration, no definite cleft formed.
  1. Asci 8-spored; stromata confluent to form an effuse crust; species on Rapanea (Myrsine).
     1. *C. fructicola* (Figures 20, 21).
  2. Asci 2-spored; stromata scattered; species on Podocarpus.
     2. *C. bispora*[9] (Figure 43).

*B*. Perithecial neck lacking or if present then not broadened at the apex into a flattened disc; dehiscence by one or more definite clefts; all species on Podocarpus.
  1. Apex of unopened perithecium not definitely lobed.
     *a*. Perithecium barrel-shaped, more or less roughened and wrinkled, the apex flattened and the sides longitudinally grooved.
        3. *C. tropica* (Figures 26–29).
     *b*. Perithecium at maturity more or less dumb-bell shaped and frequently inequilateral, with a constricted middle portion, and a terminal swelling which is usually shaggy and traversed by several transverse parallel grooves.
        4. *C. uberata* (Figures 13–18).
     *c*. Perithecium top-shaped, the broadly rounded apex traversed by a single prominent shallow furrow.
        5. *C. nipponensis*[10] (Figure 19).
     *d*. Perithecium wedge-shaped at the apex, short-cylindrical below, dehiscence occurring along the sharp edge.
        7. *C. brasiliensis* (Figures 4, 5).
  2. Apex of unopened perithecium definitely lobed.
     *a*. Apex typically 3-lobed, rarely 2- or 4-lobed, asci typically 8-spored.
        6. *C. oreophila* (Figures 8–12, 39, 40).
     *b*. Apex typically 2-lobed, in some individuals 3-lobed, asci typically 3-spored.
        8. *C. portoricensis* (Figures 1–3, 41, 42).
     *c*. Apex typically 3-lobed, in some individuals 4–5-lobed, asci typically 3-spored.
        9. *C. jamaicensis* (Figures 6, 7).

### 1. CORYNELIA FRUCTICOLA (Patouillard) v. Höhnel, Sitzber. Kais. Akad. Wiss. Wien. **120**: 450. 1911

*Capnodium fructicolum* Patouillard, Journal de Botanique **3**: 258, 259. 1889.

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[9] Dehiscent perithecia not yet seen, but dehiscence probably as in *C. fructicola*.

[10] Dehiscent perithecia not yet seen, but dehiscence by a single apical cleft is probable.

*Corynelia carpophila* Sydow, Botanische Jahrbucher von Engler **45**: 264. 1910.

TYPE: in herbarium of Patouillard; portion of this communicated by Patouillard deposited as No. 1642 in herbarium of the writer.

(Figures 20, 21)

Stromata fructicolous, pulvinate, black; usually rounded, often laterally confluent to form an extensive, effuse, black crust which partially or completely envelopes the fruit; individual stromata 1 mm. or less in diameter, covered by a crowded cluster of perithecia frequently showing many stages of development on a single stroma; perithecium resembling closely that of *Tripospora tripos,* definitely flask-shaped, with a spherical to ovoidal, ascigerous, basal portion and a long, narrow cylindrical neck, rounded and blunt at the apex; the neck of the perithecium provided with a canal and in early stages marked at the apex with a minute umbilicus, but closed; in later stages the apex broadened to form a wide, slightly convex disc the diameter of which equals or exceeds that of the basal, ascigerous portion; this disc becoming fimbriate-lacerate, and assuming a reddish-brown, fuzzy appearance, finally dehiscent, the margin recurving, forming a funnel-shaped opening and exposing the lighter colored inner wall; asci $11–14 \times 20–25\,\mu$ (p. sp.), 8-spored; ascospores $6.5–10.5\,\mu$ in diam.; pycnidia present; pycnospores elongated to allantoid, hyaline, $4–6 \times 1\,\mu$.

Parasitic on *Myrsine africana* in India, on *Myrsine* sp. in China, and on *Rapanea melanophloeos* in South Africa. Not known on other hosts or from other localities.

The genera *Rapanea* and *Myrsine* are very closely related, being treated side by side in Das Pflanzenreich of Engler. In Engler und Prantl, Die Natürliche Pflanzenfamilien, the genus *Myrsine* is alone recognized, *Rapanea* being cited as a synonym.

Patouillard (**34**) described *Capnodium fructicolum* upon material collected by Delavay in China on a species of *Myrsine*. Later Sydow (**51**) described *Corynelia carpophila* upon material collected by Lane Poole in South Africa on Rapanea. Von Höhnel (**22**) saw material collected in India by Butler and from it concluded that *Capnodium fructicolum* is a species of *Corynelia* and probably identical with *Corynelia carpophila.* The writer has compared the type material of *Capnodium fructicolum* with material of the original collection of *Corynelia carpophila* Sydow and with other South African material and has found them to be the same. He has also seen a portion of the material from India collected by Butler (**52**).

### MATERIAL EXAMINED

Transvaal, S. Africa: Union Department of Agriculture, Mycological Herbarium No. 1736 (collected at Helpmakaar, Zoutpansberg, Aug. 5, 1911, identified by Sydow, communicated by Miss Ethel M. Doidge, and deposited as Fitzpatrick Herb. No. 1503); Fitzpatrick Herb. No. 1748 (portion of original collection of *Corynelia carpophila* Sydow, obtained through the kindness of L. Romell from the herbarium at Dahlem).

Cape Province, S. Africa: Union Department of Agriculture, Mycological Herbarium No. 7795 (collected at Kentani, June 3, 1914, by A. Pegler, communicated by Miss Ethel M. Doidge, and deposited as Fitzpatrick Herb. No. 1620; material also deposited at Harvard University, New York Botanical Garden and in Plant Pathology herbarium at Cornell University).

Southwest China, Province of Yun-nan: Herbarium of Patouillard (*type* collected by Delavay; communicated by Patouillard).

East India, Mussoorie: Herbarium Crypt. Ind. Orient on *Myrsine africana* (collected and communicated by E. J. Butler; deposited as Fitzpatrick Herb. No. 1643).

### 2. **Corynelia bispora** sp. nov.

*Corynelia clavata f. macrospora* Sydow, Deutsche Zentral-Afrika-Exped. 1907–1908 Unter Führnug Adolf Friedrichs **2**: 100. 1910.

TYPE: original collection of *C. clavata f. macrospora* Sydow in herbarium of Sydow at Königl. Botanischer Garten und Museum at Berlin-Dahlem, Germany. Slides showing asci, mature ascospores, and pycnospores taken from a portion of the original material are deposited as No. 1722 in the writer's herbarium.

(Figure 43).

Stromata scattered, small, hypophyllous; perithecia narrowly flask-shaped, the neck dilated at the apex to form a flattened tip resembling somewhat that of *C. fructicola,* but considerably narrower and consequently less prominent than in that species; method of dehiscence undetermined but probably by fimbriate-laceration as indicated by the slightly fuzzy appearance of the apex of the perithecium; asci 60 × 17–20 μ (p. sp.), 2-spored; spores 11–15 μ in diam., pycnidia present; pycnospores hyaline, yellowish in mass, fusiform, 5–8 × 2 μ.

Parasitic on *Podocarpus milanjiani* in central Africa. Known only from the original collection, and from the type locality near Ruwenzori.

The species is founded upon a fragmentary bit of the type material of *Corynelia clavata f. macrospora* Sydow. Only a single mature perithecium was obtained for study, but this was sufficient to show that the fungus is very unlike *C. clavata* (*C. uberata*) and cannot be regarded as a variety of that species. It is probable that a critical examination of the remainder of the original collection at Berlin would make possible a more complete description of the fungus, particularly with reference to the method of dehiscence of the perithecium.

Sydow (50) states that *Corynelia clavata f. macrospora* differs from the type species in its larger spores, 10–17 × 10–14 μ, but agrees in all of its other characters. He states further that the spores of the type never exceed 9–11 μ. The writer's observations differ from those of Sydow in several essential points. In *C. clavata* measurements of spores from a number of collections show that mature spores average 12 μ in diameter and frequently reach 14 μ, thus considerably exceeding the limit set by Sydow. In *C. clavata f. macrospora* the spores measure 11–15 μ in the fragment examined but fail to reach the maximum diameter of 17 μ given by Sydow. The 2-spored asci serve to distinguish the fungus from *C. clavata;* moreover the appearance of the perithecium in the two forms is not the same. Several dozen 2-spored asci may be clearly seen in the slide deposited in the writer's herbarium and no variation from the 2-spored condition has been observed.

3. CORYNELIA TROPICA (Auerswald & Rabenhorst) Starbäck, Arkiv. for Botanik **5**: 18–20, *pl. 1, fig. 14.* 1905

*Endohormidium tropicum* Auerswald & Rabenhorst, Hedw. **8**: 89. 1869. (Rabenhorst Fungi europaei No. 1261 distributed in 1869, bears the same description, and contains a figure drawn by Fleischhak.)

*Trullula tropica* (Auerswald & Rabenhorst) Saccardo, Sylloge Fungorum **3**: 732. 1884.

*Corynelia clavata* (Linnaeus) Saccardo f. *andina* P. Hennings, Hedw. **36**: 230. 1897.

*Corynelia clavata* (Linnaeus) Saccardo p.p., in Rehm, Hedw. **37**: 328. 1898; Hennings, Hedw. **39**: 76. 1900; Saccardo, Sylloge Fungorum **16**: 650. 1902.

ILLUSTRATIONS: Fleischhak in Rab. Fung. Europ. 1261. Starbäck, Arkiv för Botanik **5**: *pl. 1, fig. 14.*

TYPE: Rabenhorst Fungi Europaei No. 1261. Material of this collection showing both asci and spores seen by the writer. (Prepared slide No. 1212a in Fitzpatrick herbarium shows asci and spores.)

(Figures 26–29)

Stromata amphigenous (chiefly hypophyllous) and caulicolous, not reported as fructicolous, usually irregular in outline, not characteristically circular, frequently much elongated, especially when erumpent along the midrib or along the edge of the leaf, occasionally elongated at right angles to the long axis of the leaf, 1–2 × 1–7 mm., dull black, rough, in section dark brown, bearing 10–50 or more crowded perithecia; perithecia erumpent, irregularly arranged on the stroma and less uniform in appearance than those of other species of the genus; immature perithecia globose or irregular due to crowding, later becoming characteristically barrel-shaped, the upper end more or less flattened and the sides marked with 6–8 parallel longitudinal grooves, the whole surface irregularly roughened by warts and wrinkles, dull black to brownish black, 0.5–1.0 mm. in length, slightly less than 0.5 mm. in width, carbonaceous; the apex of the mature perithecium marked by a faint transverse line along which dehiscence occurs, dehiscent by a wide and deep split, the two lips pulling apart and exposing the brownish-red interior of the perithecium; the margins of the lips tending to become fimbriate-lacerate and giving the fuzzy appearance seen in *C. fructicola;* asci 17–25 × 25–37 μ (p. sp.), 8-spored (rarely a 4-spored ascus or one in which some of the spores are imperfectly formed found); spores 9–12.5 μ (mostly 11 μ) in diameter.

Parasitic on *Podocarpus saligna, P. chilina* and *P. andina* in Chili, and on *P. costata* in the Philippine Islands. Not reported from other regions.

The specimens from the Philippine Islands included here contain in most cases only immature perithecia. Asci and mature spores have been observed in one collection, and are indistinguishable from those of South America material of *C. tropica.* The examination of additional Philippine material is desirable, especially since dehiscent perithecia have been observed only in the South American material. Although the fungus from the Philippines seems to differ in certain minor respects from South American specimens of *C. tropica* it certainly agrees more closely with this species than with any other as yet described, and in the present state of our knowledge the erection of a new species seems unwarranted. Rehm (44) Baker (3, 4), and others are clearly in error in regarding the Philippine fungus as *C. uberata.*

Auerswald and Rabenhorst (2) who first described *C. tropica* under the name *Endohormidium tropicum* state in their description of the species that the perithecium lacks an ostiolum. Had they found asci they doubtless would have placed the fungus in the Perisporiaceae. Neither Hennings (18, 20) nor Starbäck (48), who later studied the species, say anything concerning the dehiscence of the perithecium. Since they place the species in the Coryneliaceae, they may, however, be assumed to have believed that an ostiolum is present. Material of this species showing the method of dehiscence has been seen by the writer in only three specimens.[11] It may be safely assumed that these earlier writers never saw dehiscent perithecia. The appearance of the young perithecium gives no indication of an apical split, and the line of dehiscence seen on mature perithecia is not prominent.

Léveillé (27) describes *Sphaeronema clavatum* from material

[11] No. 1261 Rabenhorst, Fungi europaei in Herb. Rehm at Stockholm, Sweden, and No. 4261 Rabenhorst-Pazschke, Fungi europaei et extra-europaei at Purdue Univ., and at Harvard Univ.

on *Drymis chilensis* DC. collected by Gay in Chili and deposited in the herbarium of the Museum of Paris. Jaczewski (24) in connection with the preparation of his monograph of Sphaeronema reëxamined this specimen and found two fungi present. One of these, a pycnidial form, he recognized as *Sphaeronema clavatum* Lév., but transfers it to *Aposphaeria* under the name *A. clavatum* Jaczewski. The other a perithecial form which had meanwhile been incorrectly labeled in the herbarium *Corynelia clavata* Montagne, he refers to the genus *Caliciopsis* Peck. His description of the fungus is extremely interesting in several respects. He states that a section through the perithecium reveals a distinct stalk and an ovoid receptacle which is at first closed but later opens *by a large cleft at the tip*. He also states that the asci are long-stalked, ovoid, surrounded by paraphyses and contain 8 globose, brown, 1-celled spores, 7.5 $\mu$ in diameter. He publishes also figures showing a perithecium and an ascus. There is little doubt that this material represents a species of the Coryneliaceae and the description of the method of dehiscence by a wide cleft is the only one recorded in literature for any species of the group. There is also reason to believe that this material was in reality *C. tropica*. In the phanerogamic herbarium at Harvard University there is a specimen of *Podocarpus chilina* collected by Gay in Chili and sent to Harvard from the herbarium of the Museum of Paris. This specimen bears no number or other identifying label. On the leaves of this specimen the writer has found perithecia of *C. tropica*. Since the specimen in the herbarium at Paris which was examined by Jaczewski was also collected in Chili by Gay and since no species of *Corynelia* has been found on *Drymis* there is reason to suspect that this specimen was in reality *Podocarpus* and perhaps identical with the Harvard material. The host genera are not closely related but their leaves could be confused in poor specimens.

## MATERIAL EXAMINED

Chili: Rabenhorst, Fungi europaei No. 1261 (*type* material: at N. Y. Bot. Gard., in Herb. H. Rehm, Stockholm, Sweden, and in Plant Path. herb. at Cornell Univ.) ; Rabenhorst-Pazschke, Fungi europaei et extraeuropaei No. 4261 (in Bot. Dept. herb. at Harvard Univ., in Bot. Dept. herb. in Indiana Agric. Exp. Sta., Purdue University, in herb. H. Rehm, Stockholm, Sweden, and in U. S. Dept. Agric. Plant Industry herb.); Rehm, Ascomyceten No. 1326b (herb. H. Rehm, Stockholm, Sweden, and herb. C. E. Fairman, Lyndonville, N. Y.; the two specimens in Bot. Dept. herb. at Harvard Univ. are *C. oreophila*); Fitppatrick Herb. No. 1569 (material found in phanerogamic herbarium at Upsula, Sweden, on leaves of *Podocarpus chilina* distributed as No. 467 W. Lechler Pl. Chilenses Ed. R. F. Hokenacker; communicated by O. Juel); Fitzpatrick Herb. Nos. 1485, 1486, and 1487 (material found in phanerogamic herbarium at Harvard Univ. on leaves of *P. chilina* collected by H. Alabar, K. Ocksenius, and C. Gay respectively; communicated by A. J. Eames); Fitzpatrick Herb. No. 1374 (material found in phanerogamic herbarium at N. Y. Bot. Gard. on leaves of *P. chilina,* obtained in exchange from Herb. Mus. Paris); Fitzpatrick Herb. No. 1193 (material found in phanerogamic herbarium at N. Y. Bot. Gard. on leaves of *P. saligna* collected by Philippi).

Philippine Islands: Baker, Fungi Malayana No. 130 (in U. S. Dept. Agr. Bur. Pl. Industry Herb.; in Herb. Bur. Sci. Philippine Islands, Manila; and at Harvard Univ.); Nos. 851, and 7542 Herb. Bur. Sci. Philippine Islands, Manila; Fitzpatrick Herb. Nos. 1560, 1566, and 1721 (material collected on *Podocarpus costata* on Mt. Banajao, Laguna Province by Otto Reinking and E. B. Copeland; communicated by the collectors); Nos. 851 and 3639 Herb. H. Rehm (material collected by E. B. Copeland on Mt. Banajao); No. 910 Herb. H. Rehm (material collected on Mt. Banajao by F. C. Gates).

### 4. CORYNELIA UBERATA Fries ex. Acharius, Systema Mycologicum 2: 535. 1822

?*Mucor clavatus* Linnaeus fil. Species Plantarum Suppl. 453. 1781.

?*Lichen* (*Calicium*) *helopherus* Acharius, Lichenographiae Svecicae Prodromus 86, 1798.

?*Sphaeria turbinata* Persoon, Synopsis Methodica Fungorum 95. 1801.

*Corynelia uberata* Acharius, in Fries, Observationes Mycologicae **2**: 343, 344, *pl. 8, fig. 1 a-e.* 1818.

*Corynelia clavata* (Linnaeus) Saccardo, in R. Pirotta, Osservazioni sopra alcuni funghi. Nuovo Giornale Botanico Italiano **21**: 312–317. 1889.

ILLUSTRATIONS: Fries, Observationes Mycologicae **2**: *pl. 8, fig. 1, a–e.* Winter, Ber. Deut. Bot. Gesell. **2**: *figs. 4–8.* Cooke, Handbook of Australian Fungi, *fig. 242.* Lindau, in Engler und Prantl, Die Natürliche Pflanzenfamilien **1**$^1$: *fig. 261 a–c.*

(Figures 13–18)

Stromata scattered, infrequently confluent, more or less definitely circular, 1–3 mm. in diameter, chiefly hypophyllous, but often amphigenous, caulicolous, and fructicolous, not usually erumpent before the delimitation of the perithecia, in section homogeneous and black or dark-brown, externally dull black and minutely roughened, bearing finally a crowded cluster of 20–50 or more perithecia; perithecia first making their appearance through the ruptured epidermis as hemispherical protuberances on the stroma, the ascigerous cavity being partially buried and pure white within; the young perithecium cartilaginous, soon attaining a characteristically conical form, the apex smooth and shining, the base rough and dull, later protruding farther and developing a cylindrical neck which becomes clavate by the pronounced enlargement of the tip; perithecium at maturity approximately 1 mm. in length, brittle, somewhat dumb-bell shaped, usually bent in the narrow, middle portion and appearing consequently inequilateral, this being especially pronounced in those individuals borne at the margin of the stroma; the swollen apex of the perithecium at maturity flattened and deeply cleft by one to several transversely running furrows, the resulting ridges usually breaking up into scales, giving the apex of the perithecium a pronouncedly shaggy appearance, finally dehiscent along the line of the middle furrow by a wide and deep split, the two lips pulling apart and usually recurving thus exposing the ashy to brown inner wall; asci 20–26 × 34–44 μ (p. sp.), 8-spored; spores 9–14 μ (mostly 12 μ) in diam.; pycnidia sometimes developed on the stroma; pycnospores elongated, 5–7 × 2 μ.

Parasitic on *Podocarpus elongata, P. latifolia, P. Nageia, P.*

*Thunbergii, P. costata, P. falcata,* and *P. gracilior.* Known thus far only from Africa, Japan, New Zealand (Cooke 8) and the Philippine Islands, but probably occurs throughout the tropical and subtropical regions of the Eastern Hemisphere. It has presumably also a considerably wider host range.

There is evident in different collections of material considerable variation in the size and general appearance of the perithecia. In the material from Japan they are somewhat smaller than those of South African specimens. No other differences have, however, been correlated with these variations, and the writer believes that a single species is represented.

The material studied by the writer agrees well with the colored illustrations and the description of *Corynelia uberata* published by Acharius in the Observationes Mycologicae of Fries (12). Acharius in connection with this description cites *Mucor clavatus* L. and *Sphaeria turbinata* Pers. as synonyms. Moreover he (Acharius 1) cites *Mucor clavatus* as a synonym in connection with the original description of *Lichen* (*Calicium*) *helopherus.*[12] No explanation of his failure to cite *L.* (*Calicium*) *helopherus* in the synonomy of *Corynelia uberata* can be given. Fries (13) uses the name *C. uberata* in Systema Mycologicum but Saccardo (45) selecting the earlier specific name of Linnaeus designates the species as *C. clavata* (L.) Sacc. Because the latter binomial has come into more common use in recent years it is important that the identity of *C. uberata* and *Mucor clavatus* be demonstrated if possible. We cannot be sure from an examination of literature that the specimens on which these two species were based were ever compared. The name *Mucor clavatus* was first used by the younger Linné (29) in connection with the following description: "*clavatus. Mucor perennis, stipite filiformi nigro, capitulo obtuso nigro glabro. Habitat in foliis Arborum. Refert puncta in frondibus Filicum.*" He fails to state where he obtained his material and the description certainly cannot be regarded as applying unquestionably to *C. uberata*. The identity of the two forms could be demonstrated, therefore, only by a comparison of the type materials. An authentic sypecimen of *Mucor calvatus* probably does not exist. The herbarium of Linnaeus and that of Sir J. E. Smith with which many of the younger Linne's specimens are incorporated have been examined for the writer by Miss E. M. Wakefield. She states that the only specimen in the herbarium bearing the name *Mucor clavatus* is labeled in an unknown handwriting, is on bark, not leaves, and is not a *Corynelia* at all, but *Calosphaeria princeps* as noted on the sheet by Berkeley and Massee. Moreover although Acharius, Persoon, and Fries cite *Mucor clavatus* in their publications an authentic specimen of this species is not present in any of their herbaria today.

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[12] Fries in connection with the description of *C. uberata* in Systema Mycologicum cites *Lichen* (*Calicium*) *colpodes* Acharius as a synonym. This is evidently a mistake in citation since this species is given as *Lichen* (*Imbricaria*) *colpodes* by Acharius, and from the description clearly refers to another organism. Fries apparently had in mind *Lichen* (*Calicium*) *helopherus* Acharius which was collected at the Cape of Good Hope and is stated by Acharius to be identical with *Mucor clavatus* Linnaeus. It is worthy of note, however, that in the description of *Corynelia uberata* signed by Acharius in Observationes Mycologicae the name *Lichen helopherus* is omitted from the synonomy.

A specimen of recently collected material from South Africa communicated by Miss Doidge was mailed to Professor O. Juel, curator of the herbarium of Elias Fries, with the request that he compare it with the original material of *Corynelia uberata* deposited at Upsala. He has supplied the following facts. A single specimen in the herbarium bears a label written by Fries as follows: "*Corynelia uberata* Fr. Cap. B. sp. Dedit Acharius, Exiguum, at characterist." It consists of a fragment of a leaf bearing two stromata, only one of which is well developed. Most of the perithecia have been broken away, only one or two being in good condition. These are, however, of the same shape and size as those on the specimen from Miss Doidge submitted for comparison. Since this specimen in the herbarium of Fries was received from Acharius and since it is the only specimen in the herbarium labeled by Fries as *Corynelia uberata,* we are justified in believing that it constitutes a portion of the type material of this species. Moreover in the herbarium of Thunberg at Upsala there is another specimen, also fragmentary, which bears the same data as the specimen of Fries and agrees with it in every essential respect. This was, however, erroneously labelled *Sphaeria capitata.*[13] These two specimens are unquestionably according to Juel, parts of a single collection of material made by Thunberg on *Podocarpus falcata* at the Cape of Good Hope.

Authentic material of *Lichen* (*Calicum*) *helopherus* and *Sphaeria turbinata* are probably no longer in existence. A search for specimens of these species has been made for the writer in the herbarium of Acharius at Helsingfors, Finland, and in that of Persoon, at Leiden, Netherlands, but without success. Since Persoon (**39**) states that his material was received from Thunberg there is some reason for suspecting that *Sphaeria turbinata* Pers., *Lichen* (*Calicium*) *helopherus* Acharius, and *Corynelia uberata* Acharius were all founded on a single collection of material made by Thunberg (**53 54**) at the Cape of Good Hope. The descriptions were all prepared in such a manner, however, that a reasonable doubt remains as to the identity of the three forms. There is no reason for believing that any of these workers saw other than the material on which his own description was based. It seems best from every standpoint to accept for the species under consideration the name *Corynelia uberata.* There is certainly no justification for using the binomial *C. clavata* (L.) Sacc.

*Corynelia clavata f. fructicola* is the name applied by Rehm (**43**) to material collected at the Cape of Good Hope on *Podocarpus elongata,* and distributed as No. 1326a of Rehm's Ascomyceten. The name was applied to specimens occurring on the fruit of the host in contrast to those found on the leaves (*f. foliicola*). The writer has examined the specimen in Rehm's own herbarium, and feels that the use of these form names is undesirable since the fungus on the leaves is morphologically identical with that on the fruit. An examination of two sets of the same exsiccati shows that Rehm distributed as No. 1326b. under the name *C. clavata* a mixed lot of material of *C. oreophila* and *C. tropica* collected in Chili by Neger.

[13] Same as *Xylaria Schweinitzii* B. & C.

## MATERIAL EXAMINED

Cape Province: Rabenhorst-Winter, Fungi europaei No. 3149 (specimens in Ellis and Earle herbaria at N. Y. Bot. Gard., in Plant Path. herb. at Cornell University, and two numbers in herb. Rehm at Stockholm); de Thümen Mycotheca universalis No. 776 (in N. Y. Bot. Gard. Herb., and in Bot. Dept. Herb. at University of Michigan); Fitzpatrick Herb. No. 1197 (material found in phanerogamic herbarium at N. Y. Bot. Gard. on leaves of *Podocarpus elongata* distributed in Cape Fl. Spec. by Steudel of Esslingen, Germany); Fitzpatrick Herb. No. 1483 (material found in phanerogamic herbarium at Harvard Univ. on leaves of *Podocarpus sp.* collected by Harvey, and labeled ex. Herb. Collegii S. S. Trin. Dublin); Union Department of Agriculture, Mycological Herbarium Nos. 986, 5580, 7354, 7815, 8970, 8971, and 9739 (collected in various localities and on several different hosts, communicated by Miss Ethel M. Doidge, and deposited as Fitzpatrick Herb. Nos. 1622, 1613, 1621, 1614, 1617, 1616, and 1619 respectively); Rehm Ascomyceten No. 1326a (specimen in Herbarium of Rehm); Union of South Africa, Dept. Agric., Natal Herb. Nos. 917, 918 (material communicated by van der Bijl, and deposited in Fitzpatrick Herb. as Nos. 1575 and 1576 respectively; material of No. 1575 deposited also at Harvard University, at New York Botanical Garden, and as No. 12059 in Plant Path. herbarium at Cornell University); Fitzpatrick Herb. Nos. 1564 and 1565 (two additional collections of material communicated by van der Bijl).

Transvaal: Sydow, Fungi exotici exsiccati No. 185 (in N. Y. Bot. Gard. herb., in Plant Path. herb. at Cornell Univ., and in herb. Bur. of Sci., Manila); Union Department of Agriculture, mycological herbarium Nos. 1743, 7410, and 1770 (communicated by Miss Ethel M. Doidge, and deposited in Fitzpatrick herbarium as Nos. 1504–1506 respectively).

Zululand: Union Department of Agriculture, mycological herbarium No. 2027 (collected at Eshowe by J. B. Pole-Evans, communicated by Miss Ethel M. Doidge, and deposited in Fitzpatrick Herbarium as No. 1618).

Tropical East Africa: Fitzpatrick Herb. No. 1195 (material found in phanerogamic herbarium at N. Y. Bot. Garden. on leaves of *Podocarpus gracilior* collected by Whyte in 1898 and communicated by Roy. Hort. Bot. Gard. Kew); U. S. D. A. Bur. Pl. Ind. herb. (material found in phanerogamic herbarium of U. S. Nat. Museum on leaves of *P. gracilior,* No. 630548, collected by E. A. Mearns).

Japan: Fitzpatrick Herb. No. 1639 (material collected by S. Kawagae on Yaku Island, Prefecture Kagoshima on *Podocarpus Nageia,* communicated by G. Yamada, Morioko, Japan).

Philippine Islands, Laguna, Luzon: Fitzpatrick Herb. No. 1750 (material communicated by Otto Reinking).

### 5. **Corynelia nipponensis** sp. nov.

TYPE: in Fitzpatrick Herb. Nos. 1204 and 1644.

(Figure 19)

Stromata scattered, 1–4 mm. in diameter, hypophyllous, elongated at right angles to the long axis of the leaf, the epidermis rupturing by a definite transverse slit, occasionally more or less circular, bearing a crowded cluster of 10–40 or more perithecia; perithecium top-shaped, the sides tapering toward a narrowed base, smooth, the broad flat apex more or less rounded, and traversed by a shallow furrow which evidently marks the line of dehiscence; ruptured perithecia not seen; perithecia crushed, on the slide shown to consist of long, brown, parallel hyphae which give a characteristic and diagnostic appearance; asci 30–42 × 17–27 μ (p. sp.), 8-spored; spores 8.5–11 μ (mostly 10 μ) in diam.

Parasitic on *Podocarpus macrophylla* Don. in Japan.

Only a single collection of this species is known to the writer. Material of *Podocarpus macrophylla* collected in Japan was received at the Royal Botanic Gardens at Kew in January, 1893, from the Science College of the Imperial University of Japan and was placed in the phanerogamic herbarium. The place and date of the collection and the collector's name are unknown. George Massee found material of a species of *Corynelia* on this specimen and placed it in the cryptogamic herbarium. This is labeled in his own handwriting: "*Corynelia uberata* Fr. on *Podocarpus macrophylla* Don., Japan." A portion of this specimen was later sent to the New York Botanical Garden and is in the herbarium there. The writer has studied the specimen in the New York Botanical Garden, and has received also for comparison a portion of the material deposited at Kew. The two specimens are clearly the same thing. The fungus is not, however, *Corynelia uberata.* The perithecia are of greater diameter than those of *C. uberata,* and differ from them in shape and general appearance. It is unfortunate that more material showing the fungus in all stages of development is not available for examination, but there can be no doubt that this represents a hitherto undescribed species. It is of interest to note that *C. uberata* also occurs in Japan.

### 6. CORYNELIA OREOPHILA (Spegazzini) Starbäck, Arkiv. för Botanik **5**: 18–20, *pl. 1, fig. 13 a–c.* 1905.

*Alboffia oreophila* Spegazzini, Anal. Mus. Nac. Buen. As. **6**: 295, 296. 1898.

*Corynelia clavata* (Linnaeus) Saccardo p.p., Sylloge Fungorum **16**: 650. 1902.

ILLUSTRATIONS: Starbäck, Arkiv för Botanik **5**: *pl. 1, fig. 13 a–c.* 1905.

TYPE: The type material of *Alboffia oreophila* has been lost. Professor Spegazzini, in whose herbarium it was originally deposited, has, however, mailed to the writer material of another collection which he regards as the same. This material though young is unquestionably *Corynelia oreophila.* The original material on which *C. oreophila* was based is No. 301 Herb. Robt. Fries in the Riksmuseets Vetenskapsakademien, Stockholm, Sweden. A portion of the latter was communicated to the writer by L. Romell and is No. 1577 Fitzpatrick Herb.

(Figures 8–12, 39–41)

Stromata scattered, usually definitely circular to elliptical in outline, often erumpent before the delimitation of the perithecia, subcarbonaceous, the interior homogeneous and black, the surface black and rough, amphigenous (chiefly hypophyllous, but a single stroma sometimes erumpent on both surfaces of the leaf), not observed to be caulicolous or fructicolous, bearing 7–100 or more perithecia; perithecia large, reaching 1.5 mm. in length, approximately 0.5 mm. in lateral diameter, in some cases much crowded and covering the whole surface of the stroma, in others scattered or developed only at the margin; young perithecium conical to short cylindrical, the apex smooth, rounded, and undifferentiated, the ascus-bearing cavity partially buried in the stroma, pure white within and the surface roughened with minute markings; mature perithecium very characteristic, the lower half globose to subcylindrical and roughened like the stroma, the upper half trisulcate and trilobed giving a triangular appearance in transverse section, smooth to shiny, the apex subtruncate and trilobed-umbilicate, the apical furrows running half way down the sides of the perithecium; dehiscence taking place along these furrows, the upper half of the perithecium becoming deeply tri-cleft, the three lobes pulling apart and turning back, exposing the lighter colored inner surface of the perithecial wall and giving a 3-pronged apex; in rare cases one or more perithecia on a stroma showing only a bilobed apex and resembling closely the typical perithecium of *C. portoricensis;* in other cases, an occasional perithecium quadrilobed, a condition also met with in *C. jamaicensis;* asci ellipsoidal to ovate, $22–30 \times 34–42 \mu$ (p. sp.), typically 8-spored, asci containing a fewer number of spores uncommon; spores $10–13.5 \mu$ (mostly $12–13.5 \mu$) in diameter.

Parasitic on *Podocarpus angustifolia, P. Sellowii, P. chilina,* and *P. macrostachys.* Probably occurs also on other species of this genus. The type material collected on *P. angustifolia.*

*Corynelia oreophila, C. portoricensis, C. jamaicensis,* and *C. brasiliensis* are very closely related species. Of these *C. brasiliensis* is easily separated from the others by the wedge-shaped apex of its perithecium. *Corynelia oreophila* may be distinguished from the remaining two by its typically 8-spored ascus. In the material of this species studied less than 5 per cent. of the asci contain fewer than eight spores. A few 6-spored asci, fewer 5-spored asci, and one 2-spored ascus have been observed. This variation is not correlated with the variation in the number of lobes at the apex of the perithecium. Slides made from bilobed and quadrilobed individuals show typically 8-spored asci. In *Corynelia portoricensis* and *C. jamaicensis* approximately 80 per cent. of the asci are 3-spored and the majority of the remainder are 2-spored. In relatively rare cases 1-spored, 4-spored, or 8-spored asci have been found, but when more than three spores occur in an ascus some of the spores are often imperfectly formed. One ascus with a single large normal spore and seven minute probably non-functional spores have been seen in *C. portoricensis* (Figure 42), but an ascus with eight perfectly formed, normal spores has not been observed in either of the two species.

The perithecium of *C. oreophila* is typically trilobed at the apex, bilobed and quadrilobed individuals occurring on the stroma among the typical individuals only in rare cases. In *C. portoricensis* the perithecium is typically bilobed but the occurrence of trilobed individuals is not uncommon, comprising approximately 11 per cent. of the cases. A quadrilobed individual has not been seen in this species. In *C. jamaicensis* the perithecium is typically trilobed and occasionally quadrilobed. Moreover a pentilobed apex has been noted on a single individual, but a perithecium with a bilobed apex has not been observed.

The perithecia are approximately the same size in the four species though there is some variation. The spores in *C. oreophila* and *C. brasiliensis* are somewhat smaller than those of *C. portoricensis* and *C. jamaicensis*. This fact is probably correlated with the number of spores in the ascus in the various cases. It has been observed that in *C. portoricensis* and *C. jamaicensis* the spore in a 1-spored ascus is relatively very large, the spores in a 2-spored ascus smaller, and those in a 3-spored ascus even smaller. This condition is probably merely a result of difference in nutrition.

The species *C. brasiliensis, C. jamaicensis,* and *C. portoricensis* have been founded on relatively few collections of material. *Corynelia oreophila* has, however, been studied from five widely separated localities in South and Central America. These five collections are identical as regards ascus and perithetical characters and show no more tendency in one case than in another toward the development of few-spored asci like those of *C. portoricensis* and *C. jamaicensis*. There is no reason, therefore, to assume that additional collections of material would furnish conditions intermediate between these species. Though admittedly closely related, they must be regarded as sharply demarcated and distinct. In the introduction to this paper an attempt is made to show how they have arisen from a common ancestor.

### MATERIAL EXAMINED

Brazil: Herb. H. Rehm, No. 1881, Stockholm, Sweden (two packets of material collected by Ule, April, 1892); Fitzpatrick Herb. No. 1192 (material found in phanerogamic herbarium at N. Y. Bot. Gard. on leaf of *Podocarpus Sellowii* collected by Sellow and communicated to Herb. Columbia College, New York).

Chili: Rehm, Ascomyceten No. 1326b (two specimens in Bot. Dept. Herb. at Harvard Univ., one seen, both alike acc. Farlow; the specimen in Herb. C. E. Fairman, Lyndonville, N. Y., is *C. tropica*).

Columbia: Fitzpatrick Herb. No. 1484 (material found in phanerogamic herbarium at Harvard Univ. by A. J. Eames on leaves of *Podocarpus* sp. collected by Purdie).

Bolivia: Fitzpatrick Herb. No. 1577 (material communicated by L. Romell, of Riksmuseets Vetenskapsakademien, Stockholm, Sweden, from Herb. Robt. Fries No. 301 on *Podocarpus angustifolia;* part of the type material on which Starbäck founded *C oreöphila*).

Costa Rica: U. S. D. A. Bur. Pl. Ind. Herb. (material found in phanerogamic herbarium of U. S. National Museum by Miss Vera K. Charles on leaves of *P. macrostachys* No. 940952, collected at Volcan Poas, San Jose, by O. L. Jamenez).

### 7. **Corynelia brasiliensis** sp. nov.

TYPE: Material in herbarium of Elam Bartholomew at Stockton, Kansas, collected by F. Noack in the province of Sao Paulo, San Francisco dos Campos, Brazil, Dec. 1896, communicated by P. Sydow under the name *Corynelia oreophila* (Speg.) Starb. Slides showing asci and spores deposited in Fitzpatrick herbarium as No. 1630.

(Figures 4, 5)

Stromata scattered, circular to slightly elongated, sometimes erumpent before the delimitation of the perithecia, black, minutely roughened, amphigenous (chiefly hypophyllous) and caulicolous, not yet observed to be fructicolous, bearing 5–20 perithecia; perithecia approximately 1 mm. in length, in some cases crowded and covering the whole stroma, in others developed only at the margin of the stroma and radiating, the individual perithecia lying almost parallel to the surface of the leaf; the lower half of the mature perithecium subcylindrical, roughened like the stroma, and resembling closely the basal half of the perithecium of *C. oreophila;* the upper half, however, compressed laterally and definitely and broadly wedge-shaped; dehiscence occurring along the sharp edge of the wedge, the opposite faces of the wedge pulling apart and recurving, exposing the lighter colored inner surface of the perithetical wall; asci resembling those of *C. oreophila,* 8-spored; spores 10–12$\mu$ in diameter.

Parasitic on unidentified species of *Podocarpus* in Brazil.

In general appearance this species differs considerably from any other in the family on account of the wedge-shaped apex of the perithecium. The stroma and basal half of the perithecium are, however, very similar to the corresponding structures in *C. oreophila,* and a consideration of all the characters show these two species to be closely related. Both have typically 8-spored asci. Although the normal mature perithecia in the available material of *C. brasiliensis* have the characteristic wedge-shaped apex, occasional small, atypical and apparently stunted perithecia developed on the same stromata are of a different form. Such perithecia occasionally show the trilobed apex typical of *C. oreophila* or the bilobed apex more common in *C. portoricensis.* This condition may perhaps be explained as reversion to an ancestral type. A theoretical consideration of this point is given in the introduction to this paper. In the specimens examined there are several hundred typical full-sized perithecia with wedge-shaped apices and a relatively insignificant number of atypical individuals. No few-spored asci have been observed.

### MATERIAL EXAMINED

Brazil: Specimen in harbarium Elam Bartholomew at Stockton, Kansas, collected by F. Noack in the province of Sao Paulo, San Francisco dos Campos, Brazil, Dec. 1896; communicated by Sydow under the name *Corynelia oreophila* (Speg.) Starb.; two specimens of same collection in herbarium H. Rehm at Stockholm, Sweden; slides showing asci and spores deposited in Fitzpatrick herbarium as No. 1630; Herb. H. Rehm No. 1743, collected by Ule.

### 8. **Corynelia portoricensis** sp. nov.

*Corynelia clavata* var. *portoricensis* Stevens, Illinois Acad. Sci. Trans: **10:** 178–181. *fig.* 5. 1917.

ILLUSTRATIONS: Stevens l. c. *fig.* 5.

TYPE: in the herbarium of the University of Illinois, Porto Rican Fungi, No. 784. A portion of this specimen is deposited in Fitzpatrick herbarium as No. 1591.

(Figures 1–3, 42)

Stromata scattered, circular to elongated, often erumpent before the delimination of the perithecia, subcarbonaceous, the interior homogeneous and black, the surface black and rough, amphigenous (chiefly hypophyllous, a single stroma sometimes erumpent on both surfaces of the leaf), caulicolous and fructicolous, bearing approximately 1–30 (averaging 11) perithecia; perithecia large, reaching 1.5 mm. in length, young and old perithecia frequently occurring on the same stroma, the younger ones usually at the center and the maturer ones at the margin, the marginal individuals usually radiating and often lying almost parallel to the surface of the host; young perithecia conical to short cylindrical, the apex smooth, rounded, and practically undifferentiated, the ascigerous cavity partially buried and pure white within; mature perithecia of two types, the first with trilobed apices, the second with bilobed apices; the trilobed individuals greatly resembling in form and size the typical perithecia of *C. oreophila,* occurring usually in the center of the stroma, and relatively few in number (11%); the bilobed individuals considerably flattened laterally in the upper half, measuring approximately 0.5 × 0.25 mm. in lateral diameter, and so characteristic in shape that this species can be easily recognized with a hand lens; the lower part of the perithecium subcylindrical and roughened like the stroma, the upper part much smoother, minutely verrucose, dull to shiny; the apex of the trilobed individuals, subtruncate, umbilicate, and triangular as in *C. oreophila,* that of bilobed individuals rounded, not angular, slightly swollen above and tapering gradually below, traversed by a prominent suture which crosses the apex and runs down the two broader sides of the flattened upper half of the perithecium to the upper limit of the roughened lower half, or in some cases extending practically to the base of the perithecium; the bilobed perithecium sometimes also encircled in the narrowed central portion by several indistinct transverse wrinkles which give it an ungulate appearnace; dehiscence of the trilobed individuals as in *C. oreophila,* the upper half of the perithecium becoming deeply tri-cleft; dehiscence of the bilobed individuals taking place along the entire length of the furrow, the two halves of the perithecium pulling apart and turning back, exposing the interior of the ascigerous cavity and the lighter colored inner surface of the perithecial wall; asci not differing in the bilobed and trilobed perithecia, clavate to ovate, 14–25 × 25–50 $\mu$ (p. sp.), typically (80%) 3-spored, the spores borne in a single row or forming a triangular group, approximately 15% of the asci 2-spored, asci containing a larger number of spores uncommon, 1-spored asci occasionally found, one ascus containing one normal spore and seven minute, elongated, flattened and probably non-functional spores seen (Figure 42), but an ascus containing eight normal spores not observed; spores 10.5–16.5 $\mu$ in diameter (usually 12–13.5 $\mu$, imperfectly formed spores more minute, and usually elongated and flattened.

Parasitic on *Podocarpus coriacea* near Maricao, Porto Rico. Not known on other hosts, or from other localities.

In general appearance this species differs markedly from any other in the family on account of the bilobed perithecia. The characters of the asci and spores are practically identical with those of *C. jamaicensis.* In *C. jamaicensis,* however, the perithecium is typically trilobed, occasionally quadrilobed, very rarely pentilobed, but in no case yet observed bilobed. In *C. portoricensis* it is typically bilobed, occasionally trilobed (11 per cent. of the cases), but in no case yet observed quadrilobed. *C. oreophila* and *C. brasiliensis* differ from *C. portoricensis* both in having typically 8-spored asci and in the form of their perithecia.

Since these species are all closely related, the examination of abundant material was desirable as having a bearing on the question of their possible inclusion in a single species. In *C. portoricensis* plenty of material was available and a count of the 2-lobed and 3-lobed perithecia gave the following results. On 281 stromata examined there were 344 3-lobed perithecia in a total of 3025 individuals, or approximately 11 per cent. In other words a cluster of 10 perithecia contains on the average a single 3-lobed individual, the remainder being 2-lobed. Practically no variation from this percentage was obtained after the first 500 individuals were counted. Moreover on an average 11 perithecia are developed on a stroma although the limits are from 1 to 33. On only 1 of the 281 stromata examined were there more 3-lobed than 2-lobed perithecia. In this case the count was 7 to 4. On the other hand 1 stroma examined contained 33 2-lobed individuals to 1 3-lobed one, while stromata bearing as many as 20 2-lobed perithecia and no 3-lobed ones are frequent.

*Corynelia portoricensis* is described by Stevens (49) as *C. clavata* var. *portoricensis*. It is clearly much more closely related to *C. oreophila* than to *C. clavata* (*C. uberata*). The latter species is unknown from the Western Hemisphere.

### MATERIAL EXAMINED

Porto Rico: Brooklyn Botanic Garden, New York Botanical Garden, Cornell University, Exploration of Porto Rico. No. 698 (material collected by H. H. Whetzel and E. W. Olive and deposited at the three above named institutions and at Harvard Univ.: that at Cornell University Pl. Path. herb. No. 9655, Fitzpatrick Herb. No. 1021 and Whetzel Herb. No. 698); New York Botanical Garden, Carnegie Institution of Washington, United States National Museum, West Indian Exploration 1913, No. 2462 (material collected by N. L. Britton, F. L. Stevens and W. E. Hess; specimen at N. Y. Botanical Garden studied, portion of it in Fitzpatrick Herb. No. 1194); Herbarium University of Illinois, Porto Rican Fungi No. 784 (*type*, part of it deposited as Fitzpatrick Herb. No. 1591).

### 9. **Corynelia jamaicensis** sp. nov.

*Corynelia clavata* (Linnaeus) Saccardo p.p. in Hennings, Hedw. 37: 281. 1898.

TYPE: Flora Jamaicensis No. 6629 (material collected Aug. 10, 1896 by Wm. Harris on *Podocarpus purdieana* near the hotel "Holly Mount" on Mount Diablo, Jamaica).

(Figures 6, 7)

Stromata scattered, usually circular to elliptical in outline, sometimes more elongated, 1.5–3 × 1.5–7 mm., subcarbonaceous, hypophyllous, not observed to be caulicolous or fructicolous, bearing 20–100 or more crowded perithecia; perithecia forming on the buried stroma and erumpent when small, or developing later on the raised stroma; young perithecium as in *C. oreophila;* mature perithecium, large, reaching 1.5 mm. in length, approximately 0.5 mm. in lateral diameter, usually trisulcate and trilobed as in *C. oreophila;* quadrilobed individuals more common than in that species, and pentilobed individuals occasionally found; bilobed individuals never observed; dehiscence taking place along all the furrows so that a quadrilobed individual after dehiscence has a four-pronged apex; asci clavate to ovate, 15–27 × 28–42 μ (p. sp.), typically (80%) 3-spored (the spores in a single row or arranged to form a triangle), approximately 15 per cent. of the asci 2-spored, asci containing a larger number of spores uncommon, an 8-spored ascus not observed; spores 11–15μ in diameter; imperfectly formed spores more minute and usually flattened.

Parasitic on *Podocarpus purdieana* in Jamaica and known only on this host from the type locality. To be expected in other islands of the West Indies and on the mainland of South and Central America.

In general appearance of stroma and perithecium resembling *C. oreophila.* Characters of asci and spores practically identical with those of *C. portoricensis,* the tendency toward 1-spored asci being perhaps slightly more pronounced in this species than in *C. portoricensis.*

#### MATERIAL EXAMINED

Jamaica: Flora Jamaicensis No. 6629 (*type* material from the herbarium of Wm. Harris in Jamaica communicated by S. F.

Ashby and deposited in Fitzpatrick Herb. as No. 1561, also material deposited in N. Y. Bot. Gard. Herb.).

## DOUBTFUL OR EXCLUDED SPECIES ·

### 1. CORYNELIELLA CONSIMILIS Hariot & Karsten, Rev. Mycol. **12**: 128. 1890

(Figure 46)

This species was founded on a single collection of material front the island of Mauritius, and the writer has been unable to find any record of its subsequent collection. It was made the type of a new genus, and the genus is still monotypic. The original description is brief, a stroma is not mentioned, and no statement is given concerning the nature of the substratum. The fungus is not described as parasitic.

Lindau (**28**) includes the genus in the Coryneliaceae and states that a stroma similar to that of species of *Corynelia* is present. In his characterization of the family Coryneliaceae he states, moreover, that all the species are parasitic on leaves.

Through the courtesy of Professor L. Mangin, the writer has been enabled to examine a portion of the type material of this species, and the following facts are of interest. The perithecia occur on the bark of an unidentified woody plant and a stroma is absent. The bark is covered by a thin, white, waxy layer, resembling a resinous excretion, and the prominent, large, black perithecia are partially imbedded in the bark beneath this. The perithecia are usually solitary, but two or more are sometimes found close together. The shape of the perithecium cannot be determined from the material, the tips of all the individuals available for examination having been crushed. They are perhaps flask-shaped as described, but the species should be collected again and this point either confirmed or disproved. A microcopic examination of the type material shows the asci and spores in good condition. The ascus is cylindrical and 8-spored. Filiform paraphyses are present in abundance. The ascospores, at first greenish, are later brown, uniseriate, oblique, 3-septate and ellipsoidal. There is no reason for believing that the species is parasitic.

The absence of a stroma, the cylindrical non-stipitate character of the ascus, the abundance of paraphyses, and the septation of the spores all indicate that *Coryneliella consimilis* is not closely related to the Coryneliaceae. Since nothing is known, however, concerning the dehiscence of the perithecium, the proper position of the species in classification cannot be given.

2. CORYNELIA POCULIFORMIS Kunze, in Weigelt Surinam Exsic. 1827

*Hypoxylon* (*Bacillaria*) *poculiforme* Montagne, Ann. Sci, Nat. Ser. 2. **13**: 354. 1840.
*Sphaeria poculiformis* (Montagne) Léveillé, Ann. Sci. Nat. Ser. 3. **5**: 257. 1846.
*Leviellea poculiformis* Fries, Summa. Veg. 409. 1849.
*Phylacia poculiformis* (Kunze) Montagne, Ann. Sci. Nat. Ser. 4. **3**: 135 1855.

Winter (55) states that he has studied the type material of this species collected by Weigelt in Surinam, and finds that it is not a *Corynelia*. I have seen the figures given by Montagne (31) and the fungus figured is certainly not one of the Coryneliaceae.

3. HYPSOTHECA THUJINA Ellis and Everhart, Jour. Mycol. **1**: 129. 1885. Also in North American Pyrenomycetes 199, 200. 1892

Ellis founded this species on material collected on *Chamaecyparis thyoides* at Newfield, New Jersey, and gives a detailed description of both the pycnidial and ascigerous stages. The fungus is evidently closely related to the other species described by him in the genus *Hysotheca*. The original collection of material has been lost, however, and in so far as the writer has been able to discover a second collection has never been made. The type material is not in the Ellis herbarium at the New York Botanical Garden, or in the set of Ellis types at Harvard University. A search for the species was recently made by Doctor E. W. Olive and the writer at Newfield, New Jersey, the type locality, but, although the host was extremely abundant, the fungus was not found. In 1918 Doctor Olive and Professor H. H. Whetzel searched for the fungus at Lakehurst, New Jersey, but failed to find it. Since the writer has seen no material, it seems best to omit the species from the present monograph. If incorporated here it would probably bear the name **Caliciopsis thujina** (E. & E.) comb. nov.

DEPARTMENT OF PLANT PATHOLOGY,
CORNELL UNIVERSITY,
ITHACA, NEW YORK.

## LITERATURE CITED

1. **Acharius, Erik.** Lichenographiae Sueciae Prodromus. 86. 1798.
2. **Auerswald, B., and Rabenhorst, L.** *Endohormidium tropicum* Awd. et Rbh., in Rabenhorst Fungi Europaei Exsiccati No. 1261. 1869. (Same in Hedw. **8**: 89. 1869.)
3. **Baker, C. F.** The lower fungi of the Philippine Islands. Leaflets of Philippine Botany, **6**: 2116. 1914.
4. ———. Final supplement to the list of the lower fungi of the Philippine Islands. Leaflets of Philippine Botany, **7**: 2469. 1914.
5. **Berkeley, M. J.** On a collection of fungi from Cuba. Part II. including those belonging to the families Gasteromycetes, Coniomycetes, Hyphomycetes, Phycomycetes, and Ascomycetes. Jour. Linn. Soc. Bot., **10**: 391. 1869.
6. **Berlese, A. N., and Voglino, P.** Corynelieae Sacc. in litt. Additamenta Sylloge Fungorum. 193, 194. 1886.
7. **Cooke, M. C.** Undescribed fungi in the Kew herbarium. Grev., **8**: 34. 1879.
8. ———. Handbook of Australian Fungi. 318. *fig. 242.* 1892.
9. **Cooke, M. C., and Ellis, J. B.** New Jersey Fungi. Grev., **6**: 83. 1878.
10. **Ellis, J. B., and Everhart, B. M.** A new genus of Pyrenomycetes. Jour. Mycol., **1**: 128, 129. 1885.
11. ———. Hypsothèca Ell. & Everht. North American Pyrenomycetes. 199, 200. *pl. 22, figs. 1–5.* 1892.
12. **Fries, Elias.** Observationes Mycologicae, **2**: 343, 344. *pl. 8, fig. 1 a–e.* 1818.
13. ———. Systema Mycologicum, **2**: 534, 535. 1822. **3**: 340–342. 1832.
14. ———. Summa Vegetabilium Scandinaviae, etc. 409. 1849.
15. **Giesenhagen, K.** *Sorica Dusenii* n. gen. und n. sp. ein im farnsorus lebender Askomycet. Ber. Deut. Bot. Gesell., **22**: 191–196. *pl. 13.* 1904.
16. ———. *Capnodium maximum* B. & C. Ber. Deut. Bot. Gesell., **22**: 355–358. 1904.
17. **Hariot, P., and Karsten, P.** Fungi novi. Rev. Mycol., **12**: 128. 1890.
18. **Hennings, P.** Beiträge zur Pilzflora Südamerikas II. Hedw., **36**: 230. 1897.

19. ———. Fungi jamaicensis. Hedw., **37**: 281. 1898.

20. ———. Die Gattung Pericladium Passer. Beiblatt zur Hedw., **39**: 76. 1900.

21. **Höhnel, Franz v.** Fragmente zur Mykologie XII. Mitteilung. Sitzber Kais. Akad. Wiss. Wien (Math.-Nat. Kl.), **119**: 625. 1910.

22. ———. Fragmente zur Mykologie XIII. Mitteilung. Sitzber. Kais. Akad. Wiss. Wien (Math.-Nat. Kl.), **120**: 449, 450. 1911.

23. **House, H.** Report of the State Botanist 1917. N. Y. State Mus. Bull. 205–206: 44. 1919.

24. **Jaczewski, A.** Monographie du genre Sphaeronema Fries. Nouveaux Memoires de la Soc. Imp. des Nat. de Moscou, **15**: 353. *pl. 1, fig. 25.* 1898.

25. **Kalchbrenner, C.** Fungi Macowaniani. Grev., **10**: 146. 1882.

26. **Körber, Gustav W.** Parerga Lichenologica. 301. 1859–1865.

27. **Léveillé, J. H.** Description des champignons de l'herbier du museum de Paris. Ann. Sci. Nat. Ser. 3, **5**: 257–280. 1846.

28. **Lindau, G.** Coryneliaceae: in Engler und Prantl, Die Natürliche Pflanzenfamilien, **1**$^1$: 411–413. *fig. 261.* 1897.

29. **Linnaeus, Carl.** Species Plantarum. Suppl. 453. 1781.

30. **Montagne, C.** Seconde centuries de plantes cellulaires exotiques nouvelles, décades III, IV, & V. Ann. Sci. Nat. Ser. 2, **13**: 354. 1840.

31. ———. Histoire Physique, Politique et Naturelle de l'Ile de Cuba. Bot. Plantes Cellulaires,—Cryptogames de Cuba—Atlas, *pl. 12, fig. 5.* Paris, 1838–1842.

32. ———. Cryptogamia Guyanensis seu Plantarum Cellularium in Guyana Gallica Annis 1835–1849 a Cl. Leprieur Collectarum Enumeratio Universalis. Ann. Sci. Nat. Ser. 4, **3**: 135. 1855.

33. **Nylander, W.** Addenda nova ad lichenographium europaeam. Flora, **65**: 451. 1882.

34. **Patouillard, N.** Fragments mycologiques. Jour. de Botanique, **3**: 258, 259. 1889.

35. **Patouillard, N., and Gaillard, A.** Champignons du Vénézuéla et principalement de la région du Haut-Orénoque récoltés en 1887 par M. A. Gaillard. Bull. Soc. Mycol. Fr., **4**: 105, 106. 1888.

36. **Patouillard, N., and Lagerheim, G. de.** Champignons de l'equateur. Bull. Soc. Mycol. Fr., **8**: 131. 1892.

37. **Peck, Chas.** Report of the Botanist. Ann. Rept. N. Y. State Mus. Nat. Hist., **33**: 32. *pl. 2, figs. 11–15.* 1880.

38. ———. New species of fungi. Bull. Torr. Bot. Club, **9**: 62. *pl. 24, figs. 8–12.* 1882. (Review in Rev. Mycol., **4**: *pl. 29, figs. 7.* 1882.)

39. **Persoon, C. H.** Synopsis Methodica Fungorum. 95. 1801.

40. **Pirotta, R.** Osservazioni sopra alcuni funghi. Nuovo. Giorn. Bot. Ital., **21**: 313, 314. 1889.

41. **Rehm, H.** Calicieae; in Rabenhorst Kryptogamen Flora, **3**: 382–414. *30 figs.* 1896.

42. ———. Beiträge zur Pilzflora von Südamerika. Hedw., **37**: 321–328. *figs. 1–16.* 1898.

43. ———. Ascomycetes exs. fasc. 27. Beiblatt zur Hedw., **39**: 192. 1900.

44. ———. Ascomycetes Philippinenses III. The Philippine Journal of Science. C. Botany, **8**: 402. 1913.

45. **Saccardo, P. A.** Sylloge Fungorum, **1**: 74. 1882; **3**: 732. 1884; **8**: 833, 834. 1889; **9**: 441, 1073. 1891; **10**: 72. 1892; **11**: 385. 1895; **16**: 650. 1902; **17**: 621. 1905; **22**: 513. 1913.

46. **Salmon, E. S.** On *Oidiopsis taurica* (Lév.), an endophytic member of the Erysiphaceae. Ann. Bot., **20**: 187–200. *pls. 13, 14.* 1906.

47. **Spegazzini, Carolo.** Fungi Argentini novi v. critici. Anal. Mus., Nac. Bs. As., **6**: 295, 296. 1898.

48. **Starbäck, Karl.** Ascomyceten der schwedischen Chaco-Cordilleren Expedition. Arkiv. för Botanik, **5**: 18–20. *pl. 1, figs. 13, 14.* 1905.

49. **Stevens, F. L.** Porto Rican fungi, old and new. Trans. Ill. Acad. Sci., **10**: 178–181. *figs. 5, 6.* 1917.

50. **Sydow, H., and P.** Fungi in Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika-Expedition 1907–1908 unter Führung Adolf Friedrichs, Herzogs zu Mecklenburg II. 100. 1910.

51. ———. Fungi africani novi. Engler Botanische Jahrbücher, **45**: 264. 1910.

52. **Sydow, H., and P., and Butler, E. J.** Fungi Indiae Orientalis III. Ann. Mycol., **9**: 406. 1911.

53. **Thunberg, Carl P.** Prodromus Plantarum Capensium, Quas in Promontorio Bonae Spei Africes Annis 1772–1775 Collegit. 176. 1800.

54. ———. Flora Capensis, Sistens Plantas Promontorii Bonae Spei Africes, Secundum Systema Sexuale Emendatum, Redactas ad Classes, Ordines, Genera et Species Cum Differentiis Specificis, Synonymis et Descriptionibus. ed. III. 743. 1823.

55. **Winter, G.** Concerning the genus Corynelia. Ber. Deut. Bot. Gesell., **2**: 120–123. *figs. 1–8.* 1884.

56. **Wolf, F. A.** The perfect stage of *Actinonema Rosae*. Bot. Gaz., **54**: 218–234. *pl. 13.* 1912.

57. **v. Zwackh-Holzhausen, Wilhelm.** Die Lichenen Heidelbergs, nach dem Systeme und den Bestimmungen Dr. William Nylander's. 81. 1883.